

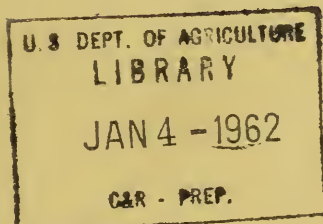
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GLOSSARY OF ADP TERMINOLOGY

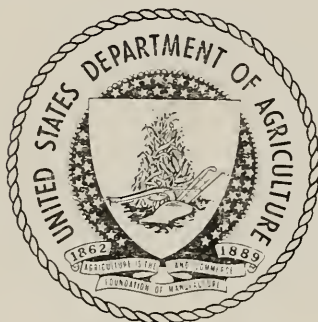
EXHIBIT 1 TO 2-OA, AUTOMATIC DATA PROCESSING MACHINE MANAGEMENT



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GLOSSARY OF ADP TERMINOLOGY

ABSOLUTE CODING - See Coding, Absolute.

AC - A suffix meaning automatic computer as in ORDVAC or ENIAC.

ACCELERATION TIME - The time which elapses between the interpretation of tape read or write instructions and the time when information can be transferred to or from the tape and high speed memory.

ACCESS, RANDOM - See Random Access.

ACCESS TIME - (1) Elapsed time from the instant at which information is called for from storage to the instant at which it is delivered; i.e., read time; or (2) Elapsed time from the instant at which information is ready for storage to the instant at which it is stored; i.e., write time.

ACCUMULATOR - A set of registers and adders in the arithmetic unit where the results of arithmetic or logic operations are first produced and stored temporarily.

ACCURACY - Correctness or freedom from error.

ADDER - A device capable of forming the sum of two or more quantities.

ADDRESS - A label, usually a number, identifying a location where information is stored.

ADDRESS, ABSOLUTE - The actual address; i.e., the label assigned by the machine designer to a particular storage location.

ADDRESS, SYMBOLIC - A label chosen to identify a particular word, function or other information in a routine, independent of the location of the information within the routine.

ADDRESS MODIFICATION - Computer operations which result in the creation or alteration of the address part of instructions.

ALLOCATE - To assign storage locations to the main routines and sub-routines thereby fixing the absolute values of any symbolic addresses.

ALPHANUMERIC - Characters which may be either letters of the alphabet, numerals, or special symbols.

ANALOG COMPUTER - See Computer, Analog.

ARITHMETIC OPERATIONS - Addition, subtraction, multiplication or division.

ARITHMETIC UNIT - That part of the hardware which performs the arithmetical and logical operations.

ASSEMBLE - To convert a program coded in symbolic language into actual language in the format for operation.

ASYNCHRONOUS COMPUTER - See Computer, Asynchronous.

AUTOMATIC DATA PROCESSING - Obtaining input information in machine language as close to the point of origin as economically possible; processing the information by automatic computer and by other machines without human intervention as far as economically justified and having the output information produced in accordance with the needs of management and the more advanced techniques of data processing.

AUTOMATIC PROGRAMMING - See Programming, Automatic.

AUTOMATIC ROUTINE - A routine which examines for certain conditions within a program or record and when these conditions occur, executes the steps of the routine independent of the console operation. For example, changing automatically from a tape unit which has been filled to capacity with data to a tape unit which is blank and is standing by ready to receive data when selected.

AUTOMATION - The field of investigation, design, development, application and methods of rendering or making processes on machines self-acting or self-moving.

AUTOMONITOR - To make an electronic computer prepare a record of its own data processing operations, or a program or routine for this purpose, such as a "trace" routine.

AVAILABLE TIME, MACHINE - Time during which a computer has the power on, is not under maintenance, and is known or believed to be operating correctly.

BAND - A channel or group of channels that form a loop, as on a magnetic drum.

BATCH PROCESSING - A technique by which items to be processed must be coded and collected into groups prior to processing.

BINARY - Pertaining to the quantity 2; more specifically the number system whose radix is the quantity 2.

BINARY CELL - See Cell, Binary.

BINARY CODED DECIMAL - The mathematical system of representing decimal numbers, alphabetic or special characters in which each character is represented by a combination of binary digits.

BINARY SEARCH - A technique for finding a particular item in an ordered set of items by repeatedly dividing in half the portion of the ordered set containing the sought for item until only the sought for item remains.

BIQUINARY SYSTEM - A system of representing decimal numbers by using a binary-based system employing two radices - often the radix 2 and the radix 5.

BIT - A contraction of binary digit.

BLANK - (1) A character which is created in memory when a blank card column is read. (2) The space which appears on a print line from a blank in memory.

BLOCK - A group of words or characters considered or transported as a unit, particularly with reference to input or output. The term is used sometimes in connection with magnetic tape as a synonym for record, or to refer to grouped records on tape.

BLOCK, INPUT - A section of internal storage of a computer reserved for the receiving and processing of input information.

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BLOCK DIAGRAM - A schematic representation of a sequence of operational steps to be done in a computer to solve a problem, using symbols to represent operations such as read, write, compare, and switch.

BLOCKETTE - A sub-block.

BLOCK RECORDS - A group of consecutive information units maintained together to conserve space on magnetic tape and provide faster reading and writing.

BLOCK SORT - A sort on one or more of the most significant characters of a key to serve as a means of making workable sized groups from a large volume of records to be sorted.

BLOCK TRANSFER - The movement of a group of words from one group of addresses to another group of addresses.

BOOTSTRAP - A programming technique under which only a portion of a program is in memory at one time, after the execution of which additional instructions are called into the same area of those previously executed. This procedure continues until completion of the program. (Sometimes referred to as self-loading.)

BRANCH - A routine within a program which may or may not be entered into depending on the existence of a particular condition.

BREAKPOINT - A point in a program in which the computer may be made to stop automatically for a visual check of progress.

B-REGISTER - A control unit counter that facilitates instruction modification. Also known as an indexing register, a B-box, B-line, or base register.

BUFFER - A device which stores information temporarily between an input or output unit and internal storage. This device allows computation to proceed while transfers of data between itself and the input or output devices take place.

BUS - A path consisting of a set of parallel lines within the machines over which information is transferred.

CALL NUMBER - A set of characters identifying a subroutine and containing information concerning parameters to be inserted in the subroutine, information to be used in generalizing the subroutine, or information related to the operands; a callword when exactly one word is filled.

CAPACITY - A measure of the volume of information which a register or unit, a device, is capable of handling.

CARD - Heavy, stiff paper of uniform size and shape, adapted for being punched in an intelligent array of holes. The punched holes are sensed electrically by wire brushes or mechanically by metal feelers.

CARD CODE - The coding system used for recording data on a punched card.

CARRIAGE, AUTOMATIC - A paper guiding and holding device which is automatically controlled to feed continuous forms into position for printing in a pre-established pattern.

CARRIAGE CONTROL - Means of directing the spacing and skipping of forms on the printer. This direction may be performed either under complete control of the program or under control of a switch.

CARRY - The admissible mark to be taken to the next higher place and then added when the sum of the marks in one place exceeds or equals the radix.

CELL - An address, or the physical location on or in a storage device that is identified by an address.

CELL, BINARY - An element that can have one or the other of two stable states or conditions and thus can store a unit of information.

CHADDED PAPER TAPE - Paper tape with the holes fully punched. It may be used as input for some computers.

CHADLESS PAPER TAPE - Paper tape with the holes partially punched so that data may be printed on the tape. It is commonly used in teletype operations.

CHANGE TAPE - See Tape, Change.

CHANNEL - A path along which information, particularly a series of digits or characters, may flow. In storage which is serial by character and parallel by bit; e.g., a magnetic tape or drum in some coded-decimal computers, a channel comprises several parallel tracks. In a circulating storage a channel is one recirculating path containing a fixed number of words stored serially by word.

CHARACTER - One of a set of elementary symbols such as those corresponding to the keys on a typewriter. The symbols may include the decimal digits 0 through 9, the letters A through Z, punctuation marks, operation symbols, and any other single symbols which a computer may read, store, or write; a pulse code representation of such a symbol.

CHECK - A means of verification of information during or after an operation.

CHECK, AUTOMATIC OR BUILT-IN - Provision, constructed in the machine, for verifying information transmitted, manipulated, or stored by any unit or device of the computer.

CHECK, DUPLICATION - A check which requires that the results of two independent performances (either concurrently on duplicate equipment or at a later time on the same equipment) of the same operation be identical.

CHECK, FORBIDDEN-COMBINATION - A check, usually automatic, which tests for the occurrence of a nonpermissible code expression. A self-checking code (or error-detecting code) uses code expressions such that one (or more) error(s) in a code expression produces a forbidden combination.

CHECK, MATHEMATICAL OR ARITHMETICAL - A check making use of mathematical identities or other properties, frequently with some degree of discrepancy being acceptable; e.g., checking multiplication by verifying that $A \times B = B \times A$, checking a tabulated function by differencing, etc.

CHECK, ODD-EVEN - A check system in which a one or zero is carried along in a word depending on whether the total number of ones (or zeros) in a word is odd or even.

CHECK, PARITY - A summation check in which the binary digits, in a character or word, are added and the sum checked against a single, previously computed parity digit; i.e., a check with tests whether the number of ones is odd or even.

CHECK, PROGRAMMED - A system of determining the correct program and machine functioning either by running a sample problem with similar programming and known answer, including mathematical or logical checks such as comparing A times B with B times A and usually where reliance is placed on a high probability of correctness rather than built-in-error-detection circuits or by building a checking system into the actual program being run and utilized for checking during the actual running of the problem.

CHECK, REDUNDANT - A check which uses extra digits, short of complete duplication, to help detect malfunctions and mistakes.

CHECK, SUMMATION - A redundant check in which groups of digits are summed, usually without regard for overflow, and that sum checked against a previously computed sum to verify accuracy.

CHECK, TRANSFER - Verification of transmitted information by temporary storing, re-transmitting and comparing.

CHECK, TWIN - A continuous duplication check achieved by duplication of hardware and automatic comparison.

CHECK BIT - One or more digits carried in a character or a word dependent upon the remaining digits in such a fashion that if a single error occurs, the error will be reported. Sometimes called parity digit.

CHECK POINT - Programming which checks by all means available that the program has been executed correctly up to a predetermined point.

CHECK POINT AND RESTART PROCEDURE - A programming technique used to verify the accuracy of the results from processing data up to a logical point during the run (check point) and providing a means for restarting the run at the last correct point rather than rerunning the job from the beginning.

CLEAR - To reset a register to zero.

CLOCK, MASTER - The source of standard signals required for sequencing computer operation, usually consisting of a timing pulse generator, a cycling unit and sets of special pulses that occur at given intervals of time. Usually in synchronous machines the basic frequency utilized is the clocking pulse.

CLOSED-SHOP - That mode of computing machine support wherein the applied programs and utility routine are written by members of a specialized group whose only professional concern is the use of computers.

CODE - A symbol system for representing information; sometimes, an instruction. Also, to write a program in machine language.

CODE, COMPUTER - The code representing the operations built into the hardware of the computer.

CODE, EXCESS-THREE - A coded decimal notation for decimal digits which represents each decimal digit as the corresponding binary number plus three; e.g., the decimal digits 0, 1, 7 and 9 are represented as 0011, 0100, 1010, 1100, respectively. In this notation, the nines complement of the decimal digit is equal to the ones complement of the corresponding four binary digits.

CODE, INSTRUCTION - An artificial language for describing or expressing the instructions which can be carried out by a digital computer. In automatically sequenced computers, the instruction code is used when describing or expressing sequences of instructions, and each instruction word usually contains a part specifying the operation to be performed and one or more addresses which identify a particular location in storage. Sometimes an address part of an instruction is not intended to specify a location in storage but is used for some other purpose. If more than one address is used, the code is called a multiple-address code.

CODE, INTERPRETER - A code which is acceptable to an interpretative routine.

CODE, MULTIPLE-ADDRESS - An instruction or code in which more than one address or storage location is utilized. In a typical instruction of a four-address code the addresses specify the location of two operands, the destination of the result, and the location of the next instruction in the sequence. In a typical three-address code, the fourth

address specifying the location of the next instruction is dispensed with, the instructions are taken from storage in a preassigned order. In a typical two-address code the addresses may specify the locations of the operands. The results may be placed at one of the addresses or the destination of the results may be specified by another instruction.

CODE, OPERATIONAL - That part of an instruction which designates the operation to be performed.

CODED DECIMAL - A way of representing decimal numbers as equivalent numbers in some other number system while retaining in part a 10's radix, as for example, the binary coded decimal system, or the excess 3 system.

CODED DECIMAL DIGIT - See Digit, Coded Decimal.

CODING - Writing a program in machine language.

CODING, ABSOLUTE, RELATIVE OR SYMBOLIC - Coding in which one uses absolute, relative or symbolic addresses, respectively; coding in which all addresses refer to an arbitrarily selected position, or in which all addresses are represented symbolically.

CODING, AUTOMATIC - Any technique in which a computer is used to help bridge the gap between some "easiest" form, intellectually and manually, of describing the steps to be followed in solving a given problem and some "most efficient" final coding of the same problem for a given computer; two basic forms are compilation routine and interpretation routine.

COLLATE - To combine two or more ordered sets of information in any way such that a similar sequence is observed in the combined set.

COLLATION SEQUENCE - The sequence into which the allowable characters of a computer are ranked or ordered.

COLLATOR - A machine which has two card feeds, four card pockets and three stations at which a card may be compared or sequenced with regard to other cards so as to select a pocket in which it is to be placed.

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COMMAND - A set of signals initiating specific action in an automatic computer; a command is one part of an instruction.

COMMON LANGUAGE - A machine sensible information representation which is common to a related group of data processing machines.

COMPARATOR - A device for comparing two different transcriptions of the same information to verify the accuracy of transcription, storage, arithmetic operation or other process, in which a signal is given dependent upon the relative state of two items; i.e., larger, smaller, equal, difference, etc.

COMPARE - To examine the representation of a quantity for the purpose of discovering its relationship to zero, or of two quantities for the purpose of discovering identity or relative magnitude.

COMPILE - To produce a machine-language routine from a routine written in non-machine language by: (1) selecting appropriate subroutines from a subroutine library, as directed by the instructions or other symbols of the original routine; (2) supplying the "connective tissue" which combines the subroutines into a workable routine; (3) translating the subroutines and connective tissue into machine language. The compiled routine is then ready to be loaded into memory and run; i.e., the compiler does not usually run the routine it produces.

COMPILER - A program making routine which produces a specific program for a particular problem by determining the intended meaning of an element of information expressed in pseudo-code, selecting or generating the required subroutine, transforming the subroutine into specific coding for the specific problem, assigning specific storage registers, etc., and entering it as an element of the problem program, maintaining a record of the subroutines used and their position in the problem program and continuing to the next element of information in pseudo-code.

COMPUTER - Any device capable of accepting information, applying prescribed processes to the information, and supplying the results of these processes; sometimes, more specifically, a device for performing sequences of arithmetic and logical operations; sometimes, still more specifically, a stored-program digital computer capable of performing sequences of internally-stored instructions, as opposed to calculators on which the sequence is impressed manually (desk calculator) or from tape or cards (card programmed calculator).

COMPUTER, ANALOG - A computer in which numbers are represented by physical magnitudes, such as the amount of rotation of a shaft or a quantity of electrical voltage or current as opposed to clearly defined numbers processed in a digital computer.

COMPUTER, ASYNCHRONOUS - A computer in which the performance of any operation starts as a result of a signal that the previous operation has been completed; contrasted with synchronous computer.

COMPUTER, AUTOMATIC - A computer which handles long sequences of operations without human intervention.

COMPUTER, DIGITAL - A computer using number to express all the variables and quantities of a problem. The numbers are usually expressed as a space-time distribution of punched holes, electrical pulses, sonic pulses, etc.

COMPUTER, SYNCHRONOUS - A computer in which the performance of all operations is controlled with equally spaced signals from a master clock.

CONDENSED INSTRUCTION DECK - Card output from an assembly program in which are punched several instructions in machine language per card. Input to the assembly program consists of one instruction per card, thus, the name condensed deck is used for output.

CONDENSER STORAGE - Storage which retains a factor only as long as power is supplied to it or until another digit is read into the unit. This type is required for the speed necessary for calculating.

CONDITIONAL - Subject to the result of a comparison made during computation; subject to human intervention.

CONDITIONAL BRANCH - Usually a transfer of control. The transfer will take place only if a certain condition is satisfied.

CONDITIONAL TRANSFER - See conditional branch.

CONFIGURATION - A group of machines which are interconnected and are programmed to operate as a system.

CONSOLE - A desklike portion of the computer which may be used to control the machine manually; correct errors; determine the status of machine circuits, registers, and counters; determine the contents of memory; and revise the contents of memory.

CONTENTS - The information stored in any storage medium. Usually, the symbol () is used to indicate "the contents of"; e.g., (M) indicates the contents of the storage location whose address is M; (A) indicates the contents of Register A; (T₂) may indicate the contents of the tape on input-output unit two, etc.

CONTROL - (1) Usually, those parts of a digital computer which effect the carrying out of instructions in proper sequence, the interpretation of each instruction, and the application of the proper signals to the arithmetic unit and other parts in accordance with this interpretation. (2) Frequently, one or more of the components in any mechanism responsible for interpreting and carrying out manually-initiated directions. Sometimes called manual control. (3) In some business applications of mathematics, a mathematical check.

CONTROL PANEL - A wired panel, often removable, which is sometimes used to regulate and edit the handling of information done by a machine. Also called a plugboard.

CONTROL REGISTER - The register that stores temporarily the instruction currently being executed by the automatic computer control unit. Also called an instruction register.

CONTROL-SEQUENCE - The normal order of selection of instructions for execution. In some computers, one of the addresses in each instruction specifies the control sequence. In most other computers the sequence is consecutive except where a jump occurs.

CONTROL TOTAL - The sum formed by adding together some field from each record in an arbitrary grouping of records; used for checking machine, program and data reliability. Also called hash total.

CONTROL UNIT - That portion of the hardware of an automatic digital computer which directs the sequence of operations, interprets the coded instructions, and initiates the proper commands to the computer circuits to execute the instructions.

CONTROL WORD - Usually the first or last word of a record or first or last record of a block which carries indicative information for the following words or records.

CONVERT - To change numerical information from one number base to another; e.g., decimal to binary, and/or from some form of fixed point to some form of floating-point representation, or vice versa.

CONVERTER - A unit which changes the language of information from one form to another so as to make it available or acceptable to another machine; e.g., a unit which takes information punched on cards to information recorded on magnetic tape, possibly including editing facilities.

COPY - To reproduce information in a new location replacing whatever was previously stored there and leaving the source of the information unchanged.

CORE, MAGNETIC - See Magnetic Core.

COUNTER - A register which has a limited ability to add or subtract.

CROSSFOOTING BALANCE CHECK - The verification of computed data by independent recalculation. For example, the total gross pay at any point should equal net pay, plus total deductions, FICA deductions and taxes.

CRT - Cathode Ray Tube (a TV picture tube is a commonplace example). See Tube, Cathode Ray.

CYBERNETICS - Comparative study of the control system formed by the nervous system and brain and mechanical-electrical communication systems, such as computing machines.

DATA HANDLING - Data processing and data communication.

DATA PROCESSING MACHINE - A general name for a machine which can store and process numeric and alphabetic information. See also computer, analog and digital.

DATA REDUCTION - The application of arithmetic, mathematical, or statistical techniques to obtain or extract only the needed information from a larger amount of related information, as in the preparation of computer input, for example.

DATA TRANSMISSION EQUIPMENT - All communications equipment used in direct support of data processing equipment.

DDA - Digital Differential Analyzer, a machine for manipulating differential equations.

DEBUG - To isolate and remove all malfunctions from a computer or all mistakes (bugs) from a routine.

DECIMAL NUMBER SYSTEM - The common number system using the base ten and having ten symbols which are: 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

DECISION - The computer operation of determining if a certain relationship exists regarding words in memory or registers, and taking alternative courses of action.

DECODE - To ascertain the intended meaning of the individual characters or groups of characters in the pseudo-code program.

DELAYED TIME - Processing of historical information; i.e., information after it has been made a matter of record, not as it originates. See real time.

DELAY-LINE, ELECTRIC - A transmission line of lumped or distributed capacitive and inductive elements in which the velocity of propagation of electromagnetic energy is small compared with the velocity of light. Storage is accomplished by recirculation of wave patterns containing information, usually in binary form.

DELAY-LINE, MAGNETIC - A metallic medium along which the velocity of propagation of magnetic energy is small relative to the speed of light. Storage is accomplished by recirculation of wave patterns containing information, usually in binary form.

DELAY-LINE, MERCURY OR QUARTZ - A sonic or acoustic delay-line in which mercury or quartz is used as the medium of sound transmission.

DELAY-LINE, SONIC OR ACOUSTIC - A device capable of transmitting retarded sound pulses, transmission being accomplished by wave patterns of elastic deformation. Storage is accomplished by recirculation of wave patterns containing information, usually in binary form.

DENSITY PACKING - The number of units of useful information contained within a given linear dimension, usually expressed in units per inch; e.g., the number of binary digit magnetic pulses stored on tape or drum per linear inch on a single track by a single head.

DESIGN, LOGICAL - Automatic computer design that deals with the logical and mathematical interrelationships that must be implemented by the hardware.

DESK CHECKING - A procedure prior to assembly whereby a program is examined for clarity, logical errors and clerical errors that can be located manually.

DEVICE - A functional combination of physical components, an integrated part of the hardware.

DIAGNOSTIC CHECKS - A specific routine designed to locate either a malfunction in the computer or a mistake in coding. Also called a diagnostic routine.

DIAGNOSTIC ROUTINE - See Diagnostic Checks.

DIAGRAM - A schematic representation of a sequence of subroutines designed to solve a problem; a coarser and less symbolic representation than a flow chart, frequently including descriptions in English words; a schematic or logical drawing showing the electrical circuit or logical arrangements within a component.

DIGIT - One of the admissible marks in the decimal system - 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9.

DIGIT, BINARY - A whole number in the binary scale of notation; this digit may be only 0 or 1. It may be equivalent to an "on" or "off" condition, a "yes" or a "no" etc.

DIGIT, CODED DECIMAL - A decimal digit which is represented by a pattern of four or more bits.

DIGITS, CHECK - One or more redundant digits in a character or word, which depend upon the remaining digits in such a fashion that if a digit changes, a malfunction can be detected; e.g., a given digit may be zero if the sum of other digits in the word is odd, and this (check) digit may be one if the sum of the other digits in the word is even.

DIODE - A circuit element which passes electric current in only one direction; e.g., a vacuum tube, although all diodes are not vacuum tubes and vice versa.

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DISTRIBUTOR - Electronic circuitry which acts as an intermediate link between the accumulator and drum memory.

DOCUMENT - A business form, voucher, or written evidence of a transaction.

DOWN TIME - The period during which a computer is malfunctioning or not operating correctly due to machine failure.

DRUM, MAGNETIC - See Magnetic Drum.

DRUM DUMP - See Storage Dump.

DUMP, POWER - The removal of all power either accidentally or intentionally.

EAM - Electric Accounting Machine. A term used to designate punched card equipment.

EDIT - To rearrange information; for instance, editing may involve the deletion of unwanted data, the selection of pertinent data, the insertion of information prior to printing, zero suppression, etc. Also, tests for validity and reasonableness of information.

EDP - Electronic Data Processing.

EDPM - Electronic Data Processing Machine.

EDPS - Electronic Data Processing System.

ELECTRONIC - Pertaining to the application of that branch of science which deals with the motion, emission and behavior of currents of free electrons, especially in vacuum, gas or phototubes and special conductors or semi-conductors. Contrasted with electric which pertains to the flow of large currents in wires only.

ELECTRONIC DATA PROCESSING SYSTEM - The general term used to define an integrated system for processing business records through the use of electronic machines at electronic speed.

ENCODER - A network or system in which only one input is excited at a time and each input produces a combination of outputs. Sometimes called a matrix.

ERASE - To blank out or replace with zeros whatever symbols may have been in an address or register. To destroy data stored on the surface of a magnetic tape, magnetic drum or in memory in order to make this storage available for storage of new information.

ERROR - The amount of loss of precision in a quantity; the difference between an accurate quantity and its calculated approximation; errors occur in numerical methods; mistakes occur in programming, coding, data transmission, and operating; malfunctions occur in computers and are due to physical limitations on the properties of materials; the differential margin by which a controlled unit deviates from its target value.

ERROR, INHERITED - The error in the initial values; especially the error inherited from the previous steps in the step-by-step integration.

ERROR, ROUNDING - The error resulting from deleting the less significant digits of a quantity and applying some rule of correction to the part retained.

EXCESS 3 CODE - See Code, Excess-Three

EXCHANGE - To interchange the contents of two storage devices or locations.

EXECUTION OF AN INSTRUCTION - The set of elementary steps carried out by the computer to produce the result specified by the operation code of the instruction.

EXECUTIVE ROUTINE - A routine designed to process and control other routines.

EXIT - A means of stopping iterative action, as by means of a test in a repeated loop of operations in a program.

EXTRACT - To remove from a set of items of information all those items that meet some arbitrary criterion.

FEED, CARD - A mechanism which moves cards serially into a machine.

FEEDBACK - To make the present output of a person or machine depend upon that same person's or machine's previous output.

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FIELD - (1) Punched card machines: A set of one or more columns in each of a number of punch cards which is regularly used to report a standard item of information. For example, if columns 16 to 19 are regularly used to report weekly rate of pay, then these columns would constitute a field. (2) Computers: A set of one or more characters which is treated as a whole.

FILE - An organized, often sequential, collection of information directed toward some purpose.

FILE MAINTENANCE - The processing of a master file required to handle the non-periodic changes in it; e.g., changes in number of dependents in a payroll file.

FIXED LENGTH RECORDS - Those records where the number of characters within the record to be processed is restricted to a given number of positions. The restriction is usually caused by the characteristics of the equipment used.

FIXED POINT - A system of handling numbers in which the point separating fractions from whole numbers always is located between the same two digit columns. This applies to the decimal, binary, or other number system. This contrasts with floating point.

FIXED WORD LENGTH - Refers to computers in which data are treated in units containing a set number of characters; contrasted with variable word length.

FLIP-FLOP - An electronic circuit having two stable states, two input lines, and two corresponding output lines, such that a current flows on either one or the other of the output lines, if, and only if, the last pulse received by flip-flop is on the corresponding input line.

FLOATING-DECIMAL ARITHMETIC - A technique which operates arithmetically on numbers which are not uniform in the location of the decimal point.

FLOATING POINT - A system of representing numerical quantities with a variable number of places, the radix point being represented by a coded exponent of a power of the exponent.

FLOW CHART - A graphic representation of the major steps of work in process. The illustrative symbols may represent documents, machines or actions taken during the process. The area of concentration is on

what is to be done at each succeeding step rather than how it is to be done.

FORCE - To intervene manually in a routine and cause the computer to execute a jump instruction.

FORM - A piece of paper, cardboard, plastic, or fabric used regularly, either formally or informally, in clerical or data processing operations as a vehicle for retaining certain information. Paychecks, invoices, and form letters are examples of forms.

FORMAT - An arrangement of information on a form or in storage.

FOSDIC - An input method of photoelectrically reading microfilms of special documents to produce a magnetic tape. The special documents are business forms on which information has been coded as dark marks in certain positions. The method was developed by the Census Bureau to bypass the manual preparation both of punched cards and of magnetic tape.

FRACTIONAL - One type of fixed point system in which quantities are represented as fractions of units.

GARBAGE - Unwanted and meaningless information in memory or on tape.

GATE - A circuit with several inputs and one output which operates so that a specified condition exists on the output line if, and only if, some specified combination of conditions is met on the input lines. The logic operation "and" is an example of this.

GENERALIZED UTILITY PROGRAM - A program which performs various functional tasks common to the processing of any type of record in any type of business. As an example, sorting, merging and sequence checking are considered generalized utility programs because they merely affect the order of the records and not the contents or format of the record. The flexibility of these programs is controlled through the use of data punched in control cards and by the setting of switches by the console operator.

GENERATE - To produce a needed subroutine from parameters and skeletal coding.

GENERATING ROUTINE - A form of compiling routine, capable of handling less fully defined situations.

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GENERATOR - A program for a computer which generates the coding of a problem; a mechanical device which produces an electrical output.

GRANDFATHER CYCLE - The period during which magnetic tape records are retained before reusing so that records can be reconstructed in the event of a loss of information stored on a magnetic tape.

GRID, CONTROL - The electrode of a vacuum tube other than a diode upon which a signal voltage is impressed in order to control the plate current.

GROUP MARK - A special character used to designate the end of a record in memory for a write instruction.

HALF ADDER - A circuit having two outputs in which the output is related to the input according to the following table:

Input A Quantity	Input B Quantity	Output Sum	Output Carry
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

HANDLING - The communication and processing of information.

HARD COPY - A human readable document produced at the same time that information is transcribed to a form not easily readable by human beings.

HARDWARE - The mechanical, magnetic, electrical, and electronic devices or components from which an automatic computer is constructed.

HASH TOTAL - A summation of fields that are not ordinarily accumulated to be used for checking purposes.

HEAD - A magnetic reading or writing head - a group of small electromagnets used for reading or recording polarized spots on a permeable surface.

HEADER - First record on a reel of tape. Carries identifying information such as, as of date, program identification, report number, tape identification, etc.

HEXADECIMAL SYSTEM - The number system whose radix is the quantity 16.

HOLD - The function of retaining information in one storage device after transferring it to another device; in contrast with clear.

HOUSEKEEPING ROUTINE - The initial instructions in a program which are executed only one time.

HUNTING - A continuous attempt on the part of an automatically controlled system to seek a desired equilibrium condition. The system usually contains a standard, a method of determining deviation from standard and a method of influencing the system such that the difference between the standard and the state of the system is brought to zero. See Servomechanism.

IDP - Integrated Data Processing.

IGNORE - A typewriter character indicating that no action whatsoever be taken; an instruction requiring non-performance of what normally might be executed; not to be executed.

INDEX ACCUMULATORS, REGISTERS AND WORDS - Devices which automatically modify addresses and greatly facilitate the necessary address arithmetic. They have ability to be used for other machine functions as well.

INDEXING REGISTER - A type of B-register.

INDICATORS - Devices which register conditions such as high or equal conditions resulting from a comparison or plus or minus conditions resulting from a computation. A sequence of operations within a procedure may be varied according to the position of an indicator.

INITIALIZE - To set up an instruction so that it has as its address the location of the first factor which will be operated on.

IN-LINE - See On-line.

IN-LINE-PROCESSING - A technique by which an item may be fully processed with random access to all of the accounts that item may affect in order to keep all accounts in balance; e.g., an order for raw material requires an addition to cash accounts and a subtraction from the raw material account to maintain all accounts in balance.

INPUT - The information communicated to an automatic computer for the computer to process, or to direct the computer in doing data processing, or to communicate information for one or both of these purposes.

INPUT AREA OR BLOCK - A segment of the internal storage reserved for receiving and/or processing input data.

INPUT UNIT - The unit which takes into the automatic computer information from outside the computer.

INQUIRY - A technique whereby the interrogation of the contents of a computer's storage may be initiated at a keyboard.

INSTRUCTION - A word which directs the computer to take a certain action. The instruction consists of a command together with one or more addresses, which, taken together, cause the computer to operate upon the indicated words.

INSTRUCTION, BREAKPOINT - An instruction which, if some specified switch is set, will cause the computer to stop.

INSTRUCTION, CONDITIONAL BREAKPOINT - A conditional jump instruction which, if some specified switch is set, will cause the computer to stop, after which either the routine may be continued as coded or a jump may be forced.

INSTRUCTION, MULTIPLE-ADDRESS - See Code, multiple-address.

INSTRUCTION, ONE-ADDRESS - An instruction consisting of an operation and exactly one address. The instruction code of a single-address computer may include both zero- and multi-address instructions as special cases.

INSTRUCTION, ONE-PLUS ONE OR THREE-PLUS-ONE ADDRESS - A two- or four-address instruction, respectively, in which one of the addresses always specifies the location of the next instruction to be performed.

INSTRUCTION, TRANSFER - A computer operational step in which a signal or set of signals specifies the location of the next operation to be performed and directs the computer to that operation (or instruction).

INSTRUCTION, TWO, THREE, OR FOUR ADDRESS - An instruction consisting of an operation and 2, 3, or 4 addresses, respectively.

INSTRUCTION, ZERO-ADDRESS - An instruction specifying an operation in which the location of the operands are defined by the computer code, so that no address need be given explicitly.

INSTRUCTION CODE - An artificial language for describing or expressing the instructions which can be carried out by a computer.

INSTRUCTION COUNTER - A control register which usually contains the address of the next instruction to be executed.

INSTRUCTION REGISTER - See Control Register.

INTEGRAL - One type of fixed point system in which quantities are represented as integers.

INTEGRATED DATA PROCESSING - (1) Data processing carried out, organized, and directed according to a systems approach. (2) A collection of data processing techniques built around a common language, in which duplication of clerical operation is minimized.

INTERLACE - To assign successive storage locations to physically separated storage positions; e.g., on a magnetic drum or tape, usually for the purpose of reducing access time.

INTERNAL MEMORY - Storage devices that are an integral physical part of the automatic computer. These are usually high-speed storage devices.

INTERNAL STORAGE - See Storage, Internal.

INTERPRETER - An interpretative routine.

INTER-RECORD GAP - The space which occurs between records on tape. These are produced by the acceleration and deceleration of the tape in a write status.

ITERATIVE LOOP - A repeated group of instructions in a routine.

JACK PANEL - A plugboard.

JUMP - An instruction or signal which, conditionally or unconditionally, specifies the location of the next instruction and directs the computer to that instruction. A jump is used to alter the normal sequence

control of the computer. Under certain special conditions, a jump may be forced by manual intervention, in other words a transfer of control is made to a specified instruction.

JUMP, CONDITIONAL - An instruction which will cause the proper one of two (or more) addresses to be used in obtaining the next instruction, depending upon some property of one or more numerical expressions or other conditions.

KEY - A group of characters usually forming a field, utilized in the identification or location of an item; a marked lever manually operated for copying a character; e.g., typewriter or card punch manual keyboard.

KEY VERIFY - To attempt to verify punched cards by the use of a punched card verifier.

LABEL - (1) Exterior: A paper marker attached to a reel of magnetic tape to identify its contents. (2) Interior: A record magnetically recorded on a tape to identify the contents of the tape.

LAG - A relative measure of the time delay between two events, states, or mechanisms.

LANGUAGE, MACHINE - Information recorded in a form which may be made available to a computer; e.g., punched paper tape may contain information available to a machine, whereas the same information in the form of printed characters on a page is not available to a machine; information which can be sensed by a machine.

LIBRARIAN - The individual in charge of the facility housing, registering, and controlling tape records.

LIBRARY - A collection of standard and fully tested programs, routines or subroutines by means of which many types of problems and parts of problems can be processed and handled.

LIBRARY ROUTINES - An organized collection of standard and proven routines, which may be incorporated into larger routines in a program.

LINEAR PROGRAMMING - An operations research mathematical technique not related to computer programming techniques.

LINE PRINTING - Printing an entire line of characters across a page as the paper feeds in one direction past a type bar or cylinder bearing all characters on a single element.

LINE TRANSMISSION - Any conductor or system of conductors used to carry electrical energy from its source to a load.

LINKAGE - A technique for providing a re-entry to the main routine of a program after completion of a subroutine.

LOAD CARD - A punched card punched in a particular manner which is interpreted by a card reader of an automatic computer as conveying one or more computer instructions (IBM-650).

LOADING - A process for placing machine coded instructions or program into memory of a computer.

LOCATION - A unit storage position in the main internal storage, storing one computer word; a storage register.

LOCATION, STORAGE - A storage position holding one computer word, usually designated by a specific address on a specific register.

LOGIC - The science that deals with the canons and criteria of validity in thought and demonstration; the science of the formal principles of applications of truth tables, gating, interconnection, etc., required for arithmetic computation in a computer.

LOGIC, SYMBOLIC - Exact reasoning about relations using symbols that are efficient in calculation. A branch of this subject known as Boolean Algebra has been of considerable assistance in the logical design of computing circuits.

LOGIC DIAGRAM - A presentation in chart form showing the major input data, general processing steps, and major output data for a given run.

LOGICAL OPERATIONS - Those basic operations of the machine which are not arithmetic and not a part of input or output; e.g., comparing, selecting, searching, matching, sorting, merging, and taking alternative action.

LOOP - The repetition of a group of instructions in a routine.

MACHINE LANGUAGE - Information represented in a form which an automatic computer can handle.

MACHINE LANGUAGE CODING - Coding in the form in which instructions are executed by the computer. Contrasted to relative, symbolic and other non-machine language coding.

MACHINE-SENSIBLE - Information represented in a form which can be read by a machine.

MACRO-INSTRUCTION - A non-machine language statement, intelligible to a processor, capable of resulting in the production of a variable number of instructions in machine language.

MAGNETIC CORE - A memory device in which information is represented by the magnetic polarity of a wire-sensed permeable ring.

MAGNETIC DRUM - A rotating cylinder, the surface of which is coated with a magnetic material on which information may be stored as small polarized spots.

MAGNETIC TAPE - Tape made of metal or plastic coated with magnetic material on which information may be stored as small polarized spots.

MAIN FRAME - The central processor of the computer system. It contains the main memory, arithmetic unit and special register groups.

MAJOR SORT - The controlling or general order of items, in a sequence. For example, a month's invoices could be sorted by customer, and within each customer group, by date. The sort by customer is the major sort. The sort by date is the minor sort.

MALFUNCTION - A failure in the hardware of a computer.

MANUAL CONTROL - Direction of the computer by the console operator rather than by a stored program.

MASTER FILE - A file containing detailed or summary data of the cumulative transaction items under a program or account.

MATRIX - In mathematics, an array of quantities in a prescribed form, usually capable of being subject to a mathematical operation by means of an operation or another matrix according to prescribed rules; an array of circuit elements; e.g., diodes, wires, magnetic cores,

relays, etc., which are capable of performing a specific function; e.g., conversion from one numerical system to another.

MEMORY - The storage of symbols representing information. The term storage is preferred.

MEMORY CAPACITY - The volume of information which a memory device can store.

MEMORY DUMP - A listing of the contents of a storage device, or selected parts of it.

MEMORY POSITION - A location in the main internal storage or memory, storing one character or word depending on the type of computer.

MEMORY UNIT - The storage unit. The computer unit into which information can be introduced and later extracted.

MERGE - To combine items from two or more similarly sequenced files into one sequenced file including all items from the original files.

MESSAGE - A group of words, variable in length, transported as a unit; a transported item of information.

MICROSECOND - A millionth of a second.

MILLISECOND - A thousandth of a second.

MINOR SORT - The order of items within the homogeneous groups formed by a major sort. (See major sort.)

MNEMONIC OPERATION CODES - Operation codes written in a symbolic notation and therefore easier to remember than the actual operation codes of the machine. These codes must be converted to actual operation codes before execution, which is done as part of an assembly, or compiling routine.

MODIFY - To alter the address of an instruction.

MULTIPLEXER - A buffer capable of coordinating, within limits, several inputs or outputs.

NUMBER, BINARY - A numerical value written in the base-two system of notation.

NUMBER, DECIMAL - A numerical value written in the base-ten system of notation.

NUMBER, OPERATION - A number indicating the position of an operation or its equivalent subroutine in the sequence forming a problem routine. When a problem is stated in pseudo-code each step is sometimes assigned an operation number.

NUMBER, RANDOM - A set of digits constructed of such a sequence that each successive digit is equally likely to be any of n digits to the base n of the number.

NUMBER SYSTEM - A systematic method for representing quantities.

OCTAL SYSTEM - A number system using multiples of the base 8 and having eight symbols which are 0, 1, 2, 3, 4, 5, 6 and 7. Column unit values reading from right to left are: 1, 8, 64, 512, etc.

ODD-EVEN CHECK - A count made to determine whether the number of holes in each horizontal row of a card or the number of ones in each horizontal row of a tape is odd or even. Check is automatic and is used in connection with testing accuracy of input and output.

OFF-LINE - A term used to indicate that the specified item of equipment is detached from and operates independently of the automatic computer. This is in contrast to "on-line."

ONE ADDRESS - Single address; a system of machine instruction such that each complete instruction explicitly describes one operation and one storage location.

ON-LINE - A term used to indicate that the specified item of equipment is directly connected to and operates under the control of the automatic computer. This is in contrast to "off-line."

OPERAND - Any one of the quantities entering or arising in an operation. An operand may be an agreement, a result, a parameter, or an indication of the location of the next instruction.

OPERATION - A specific action which the machine will automatically perform whenever an instruction calls for it (e.g., addition, transfer zero test, etc.).

OPERATION, SERIAL - The type of operation within the arithmetic section of a machine such that a number is handled one digit at a time. Contrasted with parallel operation.

OPERATION, TRANSFER - An operation which moves information from one storage location or one storage medium to another; e.g., read, record, copy, transmit, or exchange. "Transfer" is sometimes taken to refer specifically to movement between different media, "storage" to movement within the same medium.

OPERATION, VARIABLE-CYCLE - Computer action in which any cycle of action or operation may be of different lengths. This kind of action takes place in an asynchronous computer.

OPERATION CODE - That part of an instruction designating the processing step to be performed.

OPERATOR - The person who actually manipulates the machine controls, places information media into the input devices, removes the output, presses the start button, etc.; a mathematical symbol which represents a mathematical process to be performed or an associated function.

OPTIMIZATION - In programming, the process of closely analyzing a complete application in order to reduce processing time to an absolute minimum. This is accomplished by combining two or more runs into a single run, by improving existing programs through elimination of duplicate routines, by combining similar routines, or by reprogramming inefficient routines. Also refers to the retirement of procedures, forms and operations outside the machine unit in order to achieve optimum exploitation of EDP potential.

OPTIMUM PROGRAMMING - The technique by which data and instructions are located in such a manner as to minimize or eliminate, if possible, non-productive waiting or searching time.

ORDER - Sequence. Also sometimes used to mean instruction or command.

OUTPUT - Information transferred from the internal storage of a computer to secondary or external storage; information transferred to any device exterior to the computer.

OUTPUT BLOCK - A portion of the internal storage which is reserved primarily for receiving, processing and transmitting data which is to be transferred out.

OUTPUT DEVICE - Part of a machine which translates the intangible electrical impulses processed by the machine into tangible permanent results: (1) Printed forms, (2) Punched cards, (3) Magnetic writing on tape.

OUTPUT UNIT - An output device.

OVERFLOW - In an arithmetic operation, the generation of a quantity beyond the capacity of the register or location which is to receive the result; overcapacity; the information contained in an item which is in excess of a given amount.

OVERLAP - The ability of a computer to read, execute and write simultaneously.

PACK - To include several brief or minor items of information into one machine item or word.

PARALLEL - Handled simultaneously in separate facilities; operating on two or more parts of a word or item simultaneously; contrasted with serial.

PARALLEL OPERATIONS - Instances where an operation or application is processed over a given period of time using actual data or records and using different systems. The results are compared to ascertain that all requirements for the operation or application have been met satisfactorily.

PARALLEL TRANSFER - A system of data transfer in which all elements of information are transferred simultaneously to another point.

PARAMETER - In a subroutine, a quantity which may be given different values when the subroutine is used in different main routines or in different parts of one main routine, but which usually remains unchanged throughout any one such use; in a generator, a quantity used to specify input-output devices, to designate subroutines to be included, or otherwise to describe the desired routine to be generated.

PARAMETER, PROGRAM - A parameter incorporated into a subroutine during computation. A program parameter frequently comprises a word stored relative to either the subroutine or the entry point and dealt with by the subroutine during each reference. It may be altered by the routine and/or may vary from one point of entry to another.

PATCH - A section of coding inserted into a routine to correct a mistake or alter the routine; explicitly transferring control from a routine to a section of coding and back again.

PERIPHERAL - A general term referring to equipment separate or separable from the main computer, and/or operations which are performed independently of the main computer.

PERMANENT STORAGE - The medium used to retain intermediate or final results outside of the machine. This is usually in the form of punched cards or magnetic tape.

PLACE - The position of an admissible mark in a word.

PLOTTING BOARD - A unit capable of graphically presenting information, usually as curves of one or more variables, analog curve or point traces.

PLUGBOARD - A control panel.

POINT - The dot that marks the separation between the integral and fractional parts of a quantity.

PREVENTIVE MAINTENANCE - Maintenance of any system which aims to prevent failures ahead of time rather than eliminate failures which have occurred.

PRINTER - Units of the machine which print the results obtained from processing some data. Numbers, letters or symbols may be printed, depending on the device.

PRINTER, LINE - A printer which records one line of symbols simultaneously.

PROBLEM DEFINITION - The art of compiling logic in the form of general flow charts and logic diagrams which clearly explain and present the problem to the programmer in such a way that all of the requirements involved in the run will be fulfilled.

PROCESSOR - A generic term which includes assembly, compiling, generation, etc.

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PROGRAM - A plan for the solution of a problem. A complete program includes plans for the transcription of data, coding for the computer and plans for the absorption of the results into the system. The list of coded instructions may be called a program, a program routine, or a routine. To plan a computation or process from the asking of a question to delivery of the results including the interpretation of the operation into an existing system.

PROGRAMMER - A person who prepares sequences of instructions for a computer, without necessarily converting them into detailed instructions.

PROGRAMMING - Planning and coding, including numerical analysis, systems analyses, specification of printing formats, and any other functions necessary to the integration of a computer into a system.

PROGRAMMING, AUTOMATIC - A technique in which the computer is used to help plan as well as to help code a problem; e.g., compiling routines or interpreting routines.

PROGRAMMING, SYMBOLIC - The use of arbitrary symbols to represent addresses in order to facilitate programming.

PROGRAM TEST - A system of checking before running any problem in which a sample problem of the same type with known answer is run.

PSEUDO-CODE - An arbitrary code, independent of the hardware of a computer, which must be translated into computer code.

PULSE - In general, a sharp difference between the normal level of an electric current and some different level of the same electric current.

PUNCH, CARD - A device which perforates holes in cards in specific locations designated by a program.

PUNCH, ELECTRONIC CALCULATING - A card handling machine which reads a punched card, performs a number of sequenced operations and punches the result in a card.

PUNCH, SUMMARY - A card handling machine which may be electrically connected to another machine; e.g., tabulator, and which will punch out on a card the information produced, calculated or summarized by the other machine.

PUNCHED PAPER TAPE - A strip of paper on which characters are represented by combination of holes punched across the strip.

PUNCH-POSITION - The location of the row in a columniated card; e.g., in an 80-column card the rows or "punch - position" may be 0 to 9 or "x" and "y" corresponding to position 11 and 12.

RADIX - The fundamental number of a number system; e.g., 10 in the decimal system or 2 in the binary system.

RANDOM ACCESS - Access to storage under conditions in which the next position from which information is to be obtained is in no way dependent on the previous one.

RAW DATA - Data which have not been processed and may or may not be in machine-sensible form.

READ - To copy, usually from one form of storage to another, particularly from external or secondary storage to internal storage; to sense the meaning of arrangements of hardware; to sense the presence of information on a recording medium.

READER, CARD - A mechanism that permits the sensing of information punched on cards by means of wire brushes or metal feelers.

READER, MAGNETIC TAPE - A device capable of restoring to a train or sequence of electrical pulses, information recorded on a magnetic tape in the form of a series of magnetized spots, usually for the purpose of transferring the information to some other storage medium.

READER, PAPER TAPE - A device capable of restoring to a train or sequence of electrical pulses, information punched on a paper tape in the form of a series of holes, usually for the purpose of transferring the information to some other storage medium.

READ IN - To place words in storage at specified addresses.

READ OUT - To copy words from specified addresses in storage into an external storage device or to output words by copying them from specified addresses in storage.

READ WHILE WRITING - The reading of a record or group of records into memory from tape at the same time another record or group of records is written from memory to tape.

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READ-WRITE HEAD - A device which reads and records magnetic spots on a drum or magnetic tape.

REAL TIME - The performance of a computation during the actual time that the related physical process transpires in order that the results of the computations are useful in guiding the physical process. For example, directing a guided missile to its target.

RECORD - A listing of information, usually in printed or printable form; one output of a compiler consisting of a list of the operations and their positions in the final specific routine and containing information describing the segmentation and storage allocation of the routine; a single item or group of items which are read into or written out from the computer; to copy or set down information in reusable form for future reference; to transcribe data by a systematic alteration of the condition, property or configuration of a physical medium; e.g., placing information on magnetic tape or a drum by means of magnetized spots.

RECORD MARK - A special character used in some computers either to limit the number of characters in a data transfer, or to separate blocked (grouped) records in tape.

REDUNDANCY CHECK - An automatic check which detects whether the number of bits in a code expression is odd or even. For example, the number of bits in memory position for some computers should be even. Should the number of bits be odd, it would be considered a redundant or invalid character.

REGISTER - The hardware for storing a word temporarily, usually in the arithmetic or logic unit.

REGISTER, CONTROL - See Control Register.

REGISTER, PROGRAM - A register in the control unit which stores the current instruction of the program and controls computer operation during the execution of the instruction; control register; program counter.

REPORT GENERATION - A technique for producing complete data processing reports given only a description of the desired content and format of the output reports and certain information concerning the input file.

REPRESENTATIVE CIRCULATING TIME - A method of evaluating the speed performance of a computer. One method is to use one-tenth of the time required to perform nine complete additions and one complete multiplication.

RERUN - To repeat all or part of a program on a computer.

RERUN POINT - That stage of a computer run at which all information pertinent to the running of the routine is available either to the routine itself or to a rerun routine in order that a run may be re-constituted.

RESET - To change the contents of a register or address to some arbitrary chosen word, usually zero.

RESTORE - To return a cycle index, a variable address, or other computer words to its initial or preselected value; periodic regeneration of charge, especially in volatile, condenser-action storage systems.

RETURN - To go back to a specific, planned point in a program, usually when an error is detected, for the purpose of rerunning the program. Rerun points are usually three to five minutes apart to avoid long periods of lost computer time. Information pertinent to a rerun is available in standby registers from point to point.

REWIND - To return a film or magnetic tape to its beginning.

ROUND OFF - To change a more precise quantity to a less precise one according to some rule, usually by choosing the nearest precise one of a given number of places.

ROUTINE - A set of coded instructions arranged in proper sequence to direct the computer to perform a desired operation or series of operations.

ROUTINE, AUTOMATIC - See Automatic Routine.

ROUTINE, COMPILING - An executive routine which before the desired computation is started translates a program expressed in pseudo-code into machine code (or into another pseudo-code for further translation by an interpreter).

ROUTINE, DIAGNOSTIC - See Diagnostic Checks.

ROUTINE, EXECUTIVE - See Executive Routine.

ROUTINE, GENERAL - A routine expressed in computer coding designed to solve a class of problems, specializing to a specific problem when appropriate parametric values are supplied.

ROUTINE, INTERPRETIVE - An executive routine which, as the computation progresses, translates a stored program expressed in some machine-like pseudo code into machine code and performs the indicated equations, by means of subroutines as they are translated. An interpretive routine is essentially a closed subroutine which operates successively on an indefinitely-long sequence of program parameters (the pseudo-instruction and operands). It may usually be entered as a closed subroutine and exited by a pseudo-code exit instructor.

ROUTINE, SERVICE - A routine designed to assist in the actual operation of the computer. Tape comparison, block location and correction routines fall in this class.

ROUTINE, TEST - A routine designed to show whether a computer is functioning properly or not.

RUN - One performance of a program on a computer; performance of one routine or several routines automatically linked so that they form an operating unit, during which manual manipulations are not normally required of the computer operator.

RUN BOOK - All material needed to document a computer application, including problem statement, flow charts, coding, and operating instructions.

SEGMENT - To divide a routine into parts, each consisting of an integral number of subroutines, each part capable of being completely stored in the internal storage and containing the necessary instructions to jump to other segments; in a routine too long to fit into internal storage, a part short enough to be stored entirely in the internal storage and containing the coding necessary to call in and jump automatically to other segments. Routines which exceed internal storage capacity may be automatically divided into segments by a compiler.

SELECT - To choose one alternative if the report on a condition is of one state, and another alternative if the report on the condition is of another state; to choose a needed subroutine from a file of subroutines.

SELF LOADING - A sequence of instructions which are so constructed that the first few instructions make the machine accept and store the following instructions automatically. See bootstrap.

SENSE - To examine, particularly relative to a criterion; to determine the present arrangement of some element of hardware, especially a manually-set switch; to read holes punched in paper.

SENTINEL - A symbol identifying or indicating the beginning and end of a word, block or field.

SERIAL - Handle one after the other in a single facility, such as transfer or store in a digit by digit time sequence.

SERVOMECHANISM - A closed loop system in which the error or deviation from a desired or pre-set norm is reduced to zero, and one in which mechanical position is usually the controlled variable; e.g., a synchronized drum storage system requires a servomechanism to insure synchronism between a crystal controlled electronic oscillator and a rotary cylinder; an AA fire control gun-positioning system requires a servo to insure that deviations are corrected.

SHIFT - To move the admissible marks in a word one or more places to the right or left. In the case of a number, this is equivalent to multiplying or dividing by a power of the radix.

SIGHT CHECK - To visually verify the sorting or punching of punched cards by examining the patterns of punched holes.

SIGN - The symbol or symbols which distinguish numbers from negative numbers for a machine.

SIGN BIT - A bit used to designate the algebraic sign of a quantity as plus or minus.

SIGNED FIELD - A field which has a plus or minus character coding over the units position to designate the algebraic sign of the entire number.

SIMULATION - An imitative type of data processing in which an automatic computer is used as an informative model of some entity, as for example, a chemical process. Information enters the computer to represent the factors entering the real process. The computer produces information that represents the results of the process. The processing done by the computer represents the process itself.

SINGLE ADDRESS INSTRUCTION - See Instruction, One Address.

SKIP - An instruction to proceed to the next instruction; a blank instruction.

SORT - To arrange items of information according to rules dependent upon a key or field contained in the items.

SOURCE LANGUAGE - The original form in which a program is prepared prior to processing by the machine. It usually refers to a program written in an advanced programming language as opposed to machine language coding.

SPECIAL CHARACTER - A character other than one of the digits 0-9 or letters A-Z. For example, \$, ¢, and &.

STORAGE - Preferred to memory, any device into which units of information can be copied, which will hold this information, and from which the information can be obtained at a later time; devices, such as plugboards, which hold information in the form of arrangements of physical elements, hardware, or equipment; the erasable storage in any given computer.

STORAGE, BUFFER - A synchronizing element between two different forms of storage, usually between internal and external; an input device in which information is assembled from external or secondary storage and stored ready for transfer to internal storage; an output device into which information is copied from internal storage and held for transfer to secondary or external storage. Computation continues while transfers between buffer storage and secondary or internal storage or vice versa take place.

STORAGE, DYNAMIC - Storage such that information at a certain position is moving in time and so is not always available instantly; e.g., acoustic delay line, magnetic drum; circulating or re-circulating of information in a medium.

STORAGE, ELECTROSTATIC - A device possessing the capability of storing changeable information in the form of charged or uncharged areas on the screen of a cathode ray tube.

STORAGE, ERASABLE - Media which may hold information that can be changed; i.e., the media can be re-used; e.g., magnetic tape, drum, or core.

STORAGE, EXTERNAL - Storage facilities divorced from the computer itself but holding information in the form prescribed for the computer; e.g., magnetic tapes, magnetic wire, punched cards, etc.

STORAGE, INTERNAL - Storage facilities forming an integral physical part of the computer and directly controlled by the computer; the total storage automatically accessible to the computer.

STORAGE, MAGNETIC - Any storage system which utilizes the magnetic properties of materials to store information.

STORAGE, MERCURY - Columns of a liquid mercury medium used as a storage element by the delaying action or time of travel of sonic pulses which are circulated by having electrical amplifier, shaper, and timer circuits complete the loop.

STORAGE, NON-ERASABLE - Media used for containing information which cannot be erased and reused, such as punched paper tapes, and punched cards.

STORAGE, NON-VOLATILE - Storage media which retain information in the absence of power and which may be made available upon restoration of power; e.g., magnetic tapes, drums, or cores.

STORAGE, PARALLEL - Storage in which all bits, or characters, or (especially) words are essentially equally available in space, without time being one of the coordinates. Parallel storage contrasts with serial storage, when words are in parallel, the storage is said to be parallel by words; when characters within words (or binary digits within words or characters) are dealt with simultaneously, not one after the other, the storage is parallel by characters (or parallel by bit respectively).

STORAGE, SECONDARY - Storage facilities not an integral part of the computer but directly connected to and controlled by the computer; e.g., magnetic drum, magnetic tapes, etc.

STORAGE, SERIAL - Storage in which time is one of the coordinates used to locate any given bit, character, or (especially) word. Storage in which words, within given groups of several words, appear one after the other in time sequence, and in which access time therefore includes a variable latency or waiting time of zero to many word-times, is said to be serial by word. Storage in which the individual bits comprising a word appear in time sequence is serial by bit. Storage for coded-decimal or other non-binary numbers in which the characters appear in time sequence is serial by character; e.g., magnetic drums are usually serial by word but may be serial by bit, or parallel by bit, or serial by character and parallel by bit, etc.

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STORAGE, STATIC - Storage such that information is fixed in space and available at any time; e.g., flip-flop, electrostatic, or coincident-current magnetic-core storage.

STORAGE, TEMPORARY - Internal storage locations reserved for intermediate and partial results.

STORAGE, VOLATILE - Storage media such that if the applied power is cut off, the stored information is lost; e.g., acoustic delay lines, electrostatic tubes.

STORAGE, WORKING - A portion of the internal storage reserved for the data upon which operations are being performed.

STORAGE, ZERO-ACCESS - Storage for which the latency (waiting time) is negligible at all times.

STORAGE DUMP - A read out or print out of the contents of the storage unit. Usually only the contents of internal storage are read out, and usually the read out is on to magnetic tape or punched cards.

STORAGE REGISTER - A register in the memory or storage of the computer, in contrast with a register is one of the other units of the computer.

STORE - To transfer an element of information to a device from which the unaltered information can be obtained at a later time.

STORED PROGRAM - A series of coded operational steps arranged in a particular sequence and placed in memory of a computer so that it can be interpreted and executed.

SUBROUTINE - The set of instructions necessary to direct the computer to carry out a well defined mathematical or logical operation; a subunit of a routine. A subroutine is often written in relative or symbolic coding even when the routine to which it belongs is not.

SUBSTITUTE - To replace an element of information by some other element of information.

SWITCH - An instruction in a program which is modified by the program to cause the computer to take alternative courses of action. The instruction usually is not a conditional transfer (it usually is a "no operation") but the alternative condition (symbol value) of the switch is usually determined by one or more prior conditional transfers. For example, as a result of a conditional transfer, the computer might change a no operation to an unconditional transfer, thus changing the course of subsequent processing.

SYMBOLIC PROGRAMMING - See Programming, Symbolic.

SYNCHRONIZER - A storage device used to compensate for a difference in a rate of flow of information or time or occurrence of events when transmitting information from one device to another.

SYSTEM - An assembly of machines united by some form of regulated interaction to form an organized whole; a collection of operations and procedures, men and machines, by which a business is carried on.

TABLE LOOKUP - An automatic search of a table to associate the applicable factors with the known reference factors.

TABULATING - The preparation of listings, as with a punched card line printer.

TALLY - A count of or number of something, as, for example, the number of records being processed, or of the number of records yet to be processed.

TANK - An acoustic delay line.

TAPE, CHANGE - A paper tape or magnetic tape carrying information that is to be used to up-date filed information (the filed information is often on a master tape).

TAPE, MAGNETIC - See Magnetic Tape.

TAPE, MAGNETIC SCRATCH - A temporary magnetic tape used by the console operators or tape handlers to facilitate general computer runs such as sort and merge runs. These tapes are, in effect, temporary working tapes with a data life usually equal to one run.

TAPE, MAGNETIC RECORD - A magnetic tape containing data and is required to be under firm library control.

TAPE, MAGNETIC RECORD, FINAL MASTER RECORD - A magnetic tape containing either detailed or summary data of the cumulative transactions items under a program or account. It is the last master record tape produced.

TAPE, MAGNETIC RECORD, INTERIM MASTER RECORD - A magnetic tape containing either detailed or summary data of the cumulative transactions items involved through the last updating process or the outstanding items or totals representing current status of a record. This tape becomes the input to subsequent runs producing new updated interim or final master record tapes.

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TAPE, MAGNETIC RECORD, PRINTING - A magnetic tape containing data extracted from the system either directly or through source printing data tapes (without destroying the source tapes) for the purpose of producing required print-outs.

TAPE, MAGNETIC RECORD, PROGRAM - A magnetic tape containing the sequence of instructions required to accomplish the processing of data or solving a problem and which may be read by the computer.

TAPE, MAGNETIC RECORD, RAW DATA INPUT - A magnetic tape containing data initially abstracted from source documents and which is being entered into the system for the first time. Conversion is generally from other media such as paper tape or punched cards.

TAPE, MAGNETIC RECORD, SOURCE PRINTING DATA - A magnetic tape containing data extracted from the system for purposes of producing a printing tape without destroying the source tape.

TAPE, MAGNETIC RECORD, WORKING TAPE - A magnetic tape containing output data from one run for input into a subsequent run. Basically, this tape is a means of moving data through the system from the raw data input tape to one or more master record tapes.

TAPE BOUND OR LIMITED - On buffered computers, descriptive of a section of a program in which the time required to read or write tapes exceeds the time required for computation.

TAPE MARK - A special character written on tape when the end of a reel marker is sensed or when the last record of a file has been written. It is emitted from the machine by a control instruction. The tape mark is a unit record of one character and is always written after the record gap. It serves either as an end-of-file or end-of-reel indication when the tape is in read status.

TELEMETER - To transmit coded information (usually obtained by analog-to digital conversion) to a place at which it is used. For example, data on the position of a guided missile are usually telemetered to a control point where the data are used to control the missile or to make a record of the missile flight.

TERMINAL BOARD - A plugboard.

TEST DATA - Data constructed and organized so that a routine in the program will be tested for performance. The data will create conditions which will require entry to basic and sub-routines to determine whether the program can handle or give condition and produce the results desired.

THREE-ADDRESS - See Code, Multiple-address.

TIME, IDLE - Time in which a machine is in good operating condition and properly attended by maintenance engineers but not in use. Where rental contracts provide for rental to be paid for a minimum number of hours, idle time is the amount of time for which rental is paid but equipment is not used although in good operating condition and properly attended.

TIME, NON-PRODUCTIVE OPERATING - Machine time spent in processing runs which are not acceptable and are rejected for rerunning or rerunning jobs which were unacceptable but were charged to productive operating time.

TIME, NON-SCHEDULED MAINTENANCE - Elapsed time during scheduled working hours between the determination of a machine failure and placement of the equipment back into operation.

TIME, OPERATIONAL USE - Time during which the equipment is in operation and is subject to rental.

TIME, PRODUCTIVE OPERATING - Machine time spent in processing accepted operations and in performing parallel operations where the EDP system produces the official agency records.

TIME, PROGRAM TESTING - Machine time expended for program testing, debugging, and volume and compatibility testing.

TIME, SET-UP - The time required to mount tape reels or perform similar operations which must be completed prior to the processing of a job or run. It is only that time during which the equipment is not available for any other purpose.

TIME, REIMBURSED OR LOANED - Machine time which is loaned or rented to another office, agency or organization either on a reimbursable or reciprocal basis.

TIME, TRAINING - Machine time expended in training employees in the use of the equipment including such activities as mounting, console operation, converter operation, printing operation and related activities and time spent in conducting required demonstrations.

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TRA (TRANSFER ANY) ROUTINE - A subroutine which provides for determination and correction, where possible, of machine errors, read-write errors, and printer-punch errors and provides necessary linkage to end-of-file and end-of-job routine. Routine is entered from a Transfer Any (TRA) instruction upon sensing any of the above conditions.

TRAILER - Last record on tape. Carries number of records on tape and other information used for checking purposes.

TRANSACTION FILE - A file containing current information relating to a data processing activity; it is usually used to update a master file.

TRANSCIEVER - A device designed to transmit data from punched card to punched card. It is essentially a conversion device which at the sending end reads the card and transmits the data over the wire. At the receiving end it punches the data into a card.

TRANSCRIBE - To copy, with or without translating, from one external storage medium to another.

TRANSFER - To copy, exchange, read, record, store, transmit, transport, or write data; to change control; to jump to another location.

TRANSFER, CONDITIONALLY - To copy, exchange, read, record, store, transmit, or write data or to change control or jump to another location according to a certain specified rule or in accordance with a certain criterion.

TRANSFER, PARALLEL - A system of data transfer in which the characters of an element of information are transferred simultaneously over a set of paths.

TRANSFER, SERIAL - A system of data transfer in which the characters of an element of information are transferred in sequence over a single path in consecutive time positions.

TRANSFER, UNCONDITIONAL - An instruction which causes the subsequent instruction to be taken from an address which is not the next one in the sequence in a digital computer which ordinarily obtains its instructions serially from an ordered sequence at all other times.

TRANSISTOR - A small solid-state semi-conducting device, ordinarily using germanium, that performs nearly all of the functions of an electronic tube.

TRANSLATE - To change information (e.g., problem statements in pseudo-code, data, or coding) from one language to another without significantly affecting the meaning.

TRANSMIT - To reproduce information in a new location replacing whatever was previously stored and clearing or erasing the source of the information.

TRANSPORT - To convey as a whole from one storage device to another.

TROUBLE - SHOOT - To search for a coding mistake or the cause of a computer malfunction in order to correct it.

TUBE, CATHODE RAY - An electronic vacuum tube containing a screen on which information may be stored by means of a multigrid modulated beam of electrons from the thermionic emitter, storage effected by means of charged or uncharged spots; a storage tube; a williams tube; an oscilloscope tube; a picture tube.

TWO-ADDRESS - See Code, Multiple-address.

UNIT RECORD - A separate record that is similar in form and content to other records, as for example, a summary of a particular employee's earnings to date.

UPDATE - To modify a master file according to current information, which is often contained in a transaction field, according to a procedure specified as part of a data processing activity.

UP TIME - Time an automatic computer is operating free of component failures, plus the time an automatic computer is energized and capable of such operation. (This definition is not universally accepted.)

UTILITY PROGRAM - Programs written by manufacturers on standard operations, such as sorting, assembling, etc., which are available for customers to use.

VALIDITY - Correctness; especially the degree of the closeness by which iterated results approach the correct result.

VALIDITY CHECK - A machine check for lost or gained bits in each digit position which is made during the internal transmission of digits.

VARIABLE LENGTH RECORDS - Records which are not of a uniform size.

VARIABLE WORD LENGTH - A term applied to computers in which the number of characters to be operated on by an instruction is almost completely under control by the programmers; contrasted to fixed word length.

VERIFIER - A device on which a manual transcription can be verified by comparing a retranscription with it character-by-character as it is being retranscribed.

VERIFY - To check a data transfer or transcription, especially those involving manual processes.

VOLUME TESTING - The process of taking a volume of actual data and having a program process it to determine that all conditions have been adequately provided for.

WIRE, MAGNETIC - Wire made of a magnetic material along small incremental lengths of which magnetic dipoles are placed in accordance with binary information.

WORD - A set of characters which occupies one storage location and is treated by the computer circuits as a unit and transported as such. Ordinarily a word is treated by the control unit as an instruction, and by the arithmetic unit as a quantity. Word lengths are fixed or variable depending on the particular computer.

WORD LENGTH - The number of admissible marks that constitute a word, often expressed in terms of bits or decimal digits.

WORD-TIME - Especially in reference to words stored serially, the time required to transport one word from one storage device to another. See also access time.

WRITE - To transfer information to an output medium; to copy, usually from internal storage to external storage; to record information in a register, location, or other storage device or medium.

X PUNCH - On IBM punched cards, a hole in the row above the zero row.

Y PUNCH - On IBM punched cards, a hole in the row nearest the top of the card; also known as a 12 punch.

ZERO - Nothing; positive binary zero is usually indicated by the absence of digits or pulses in a word; negative binary zero in a computer operating on one's complements by a pulse in every pulse position in a word; in a coded decimal machine, decimal zero and binary zero may not have the same representation. In most computers, there exist distinct and valid representation both for plus and for minus zero.

ZERO SUPPRESSION - The editing or elimination of non-significant zeros to the left of the integral part of a quantity before printing operations are initiated; a part of editing.

ZONE - A portion of internal storage allocated for a particular function or purpose; any of the three top positions of 12, 11 and 0 on a punch card. In these zone positions, a second punch can be inserted so that with punches in the remaining positions 1 to 9, alphabetic characters may be represented.

